

WHAT IS CLAIMED IS:

1. A system for transmitting signals, comprising:
a first antenna for transmitting an upper layer signal comprising an 8-VSB signal to at least one receiver; and
a second antenna for transmitting a lower layer signal to the at least one receiver;
wherein a layered modulation signal comprises the upper layer signal and the lower layer signal both interfering in a common frequency band such that the at least one receiver demodulates the upper layer signal directly from the layered modulation signal and demodulates the lower layer signal after subtracting the upper layer signal from the layered modulation signal.
2. The system of claim 1, wherein the upper layer signal comprises a legacy signal.
3. The system of claim 1, wherein the lower layer signal comprises a 2-VSB signal.
4. The system of claim 1, wherein the lower layer signal comprises a QPSK signal.
5. The system of claim 1, wherein the second antenna has a selectively limited range so that the lower layer signal does not interfere with the upper layer signal in a range where the lower layer signal could not be demodulated.
6. The system of claim 5, wherein the selectively limited range is produced by reducing a second antenna height relative to a first antenna height.
7. The system of claim 5, wherein the second antenna comprises a shaped-beam antenna in order to produce the selectively limited range.

8. A method for transmitting signals, comprising the steps of:
 - transmitting an upper layer signal with a first antenna, the upper layer signal comprising an 8-VSB signal to at least one receiver; and
 - transmitting a lower layer signal with a second antenna to the at least one receiver; wherein a layered modulation signal comprises the upper layer signal and the lower layer signal both interfering in a common frequency band such that the at least one receiver demodulates the upper layer signal directly from the layered modulation signal and demodulates the lower layer signal after subtracting the upper layer signal from the layered modulation signal.
9. The method of claim 8, wherein the upper layer signal comprises a legacy signal.
10. The method of claim 8, wherein the lower layer signal comprises a 2-VSB signal.
11. The method of claim 8, wherein the lower layer signal comprises a QPSK signal.
12. The method of claim 8, further comprising selectively limiting a range of the second antenna so that the lower layer signal does not interfere with the upper layer signal in a range where the lower layer signal could not be demodulated.
13. The method of claim 12, wherein the second antenna range is selectively limited by reducing a second antenna height relative to a first antenna height.
14. The method of claim 12, wherein the second antenna comprises a shaped-beam antenna in order to selectively limit the range of the second antenna.

15. A system for receiving layered signals, comprising:
 - a first demodulator for demodulating an upper layer signal comprising an 8-VSB signal directly from a layered modulation signal, the layered modulation signal comprising both the upper layer signal and a lower layer signal both interfering in a common frequency band; and
 - a second demodulator for demodulating a lower layer signal after subtracting the upper layer signal from the layered modulation signal.
16. The system of claim 15, wherein the upper layer signal is subtracted from the layered modulation signal with a carrier of the upper layer signal included in the subtraction.
17. The system of claim 15, wherein the upper layer signal is subtracted from the layered modulation signal with a carrier of the upper layer signal removed before the subtraction.
18. The system of claim 15, wherein the upper layer signal comprises a legacy signal.
19. The system of claim 15, wherein the lower layer signal comprises a 2-VSB signal.
20. The system of claim 15, wherein the lower layer signal comprises a QPSK signal.
21. A method for receiving layered signals, comprising:
 - demodulating an upper layer signal comprising an 8-VSB signal directly from a layered modulation signal, the layered modulation signal comprising both the upper layer signal and a lower layer signal both interfering in a common frequency band; and
 - demodulating the lower layer signal after subtracting the upper layer signal from the layered modulation signal.

22. The method of claim 21, wherein the upper layer signal is subtracted from the layered modulation signal with a carrier of the upper layer signal included in the subtraction.

23. The method of claim 21, wherein the upper layer signal is subtracted from the layered modulation signal with a carrier of the upper layer signal removed before the subtraction.

24. The method of claim 21, wherein the upper layer signal comprises a legacy signal.

25. The method of claim 21, wherein the lower layer signal comprises a 2-VSB signal.

26. The method of claim 21, wherein the lower layer signal comprises a QPSK signal.

27. A system for transmitting signals, comprising:
means for transmitting an upper layer signal comprising an 8-VSB signal to at least one receiver; and
means for transmitting a lower layer signal to the at least one receiver;
wherein a layered modulation signal comprises the upper layer signal and the lower layer signal both interfering in a common frequency band such that the at least one receiver demodulates the upper layer signal directly from the layered modulation signal and demodulates the lower layer signal after subtracting the upper layer signal from the layered modulation signal.

28. A system for receiving layered signals, comprising:
means for demodulating an upper layer signal comprising an 8-VSB signal directly
from a layered modulation signal, the layered modulation signal comprising both the upper
layer signal and a lower layer signal both interfering in a common frequency band; and
means for demodulating a lower layer signal after subtracting the upper layer signal
from the layered modulation signal.